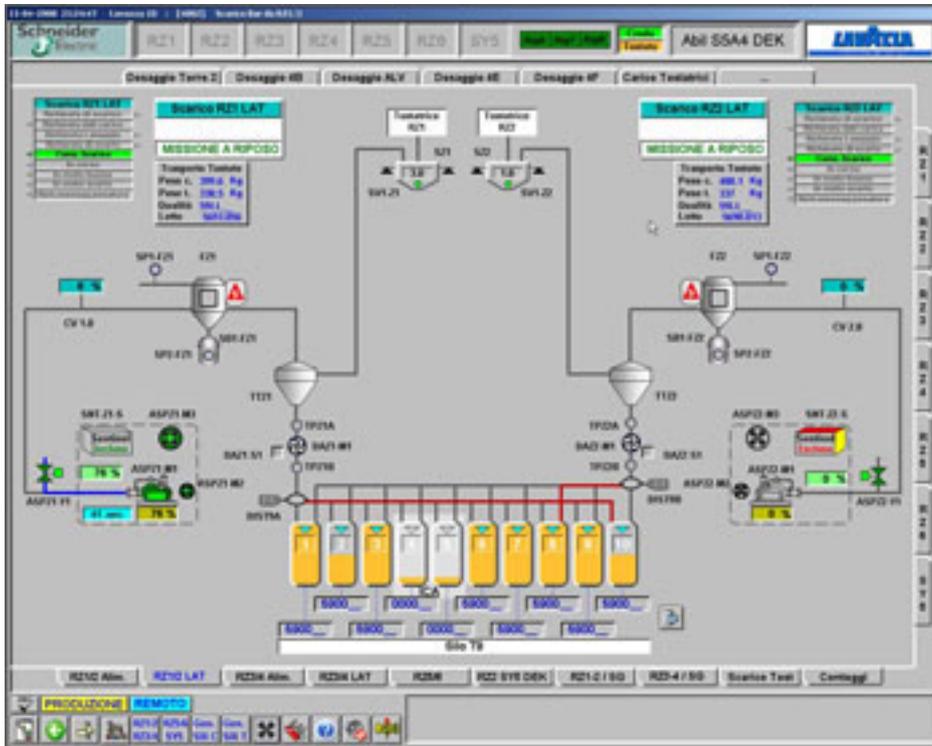


Wake Up And Smell The SCADA System



For many years, Lavazza's primary purpose has been to bring the aroma and quality of Italian espresso coffee to the world. Luigi Lavazza invented the concept of blending coffee from various sources to yield a savory blend in the early 1900s. Since then the company has built up more than a century of experience while pursuing its twin aims of excellence and innovation. Nowadays, Lavazza is the leader in quality and is recognized worldwide as the symbol of Italian espresso coffee and Italian culture.

Plant-level supervision

Modern automation technology is helping a Lavazza coffee roasting plant to maintain constant product quality, high outputs and competitive prices. The chosen control system visualizes current process data on several Web clients in the company's local network or via the Internet, automatically archives selected data and generates meaningful batch logs at the press of a button.

Coffee, the second most important export article in the world after crude oil, is imparted with its typical character consisting of more than 800 fine aromas during the roasting process, in which the green coffee beans are heated to a temperature as high as 437°F, causing them to turn brown. This process step, which is essential for the quality of the product, can run smoothly only if roasters, which work in batch operations, are charged exactly according to recipe. This in turn requires that the various raw coffees in the silos are made available at the right time and place, so that they can be ground and/or packaged immediately.

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Lavazza operates manufacturing plants in seven countries, including the U.S. and Turin, Italy where they maintain their 73,000 square meter primarily facility. Quality has always been of the greatest importance for Lavazza and they maintain an ISO 9000 certification for their Quality Management System. Lavazza was planning a thorough overhaul of their existing control system in order to take advantage of the newest technology, optimize their production cycle and gain better control over their production processes. By utilizing an easy to use, yet robust supervisory SCADA system, Lavazza was able to streamline production processes, gain more reliable controls, and easily configure their application — ultimately providing the flexibility and capability to quickly scale depending on Lavazza's needs.

When the time came to replace the operator panels used for supervision of each production line, Lavazza chose to implement a SCADA system from PcVue, a subsidiary of ARC Informatique. This software was chosen for its technology, flexibility and moderate cost. Additionally this SCADA system proved to easily interface to other existing systems in the plant allowing for seamless integration.

PcVue communicates with the various PLCs using OPC and Kepware Technologies' KEPServerEX OPC Server which provides a data exchange connection between the client software supporting DDE interfaces and Lavazza's Siemens PLCs. Lavazza's integrator developed a web interface using PcVue's Web Services client and Microsoft's .NET environment. Integration with SAP enterprise-level computing is currently under development so that production orders will be quickly tracked and notices will arrive from the production lines. In comparison with competitive SCADA systems, PcVue's SCADA system can be configured quickly because it is so easy to use and up and running fast. ARC Informatique motto is to make complex matters simple. Competing SCADA systems often require the engineers to work with many settings, parameters and require a lot of product knowledge up front during the development phase. Such systems are often cumbersome, which also makes them slow and unreliable to install. In contrast, PcVue's simplicity has enabled applications to be implemented in a shorter time, allowing for lower development and maintenance costs.

Lavazza's system integrator, Custom S.r.l, implemented the SCADA applications. There are some 30 supervisory systems across the plant floor in Torino, about 10 at Verres and about 30 at Gattinara, with mostly with redundant file servers. Some of the applications were developed on behalf of Schneider Electric. PcVue communicates to Lavazza's numerous PLCs from Telemecanique, Siemens and Beckhoff using Ethernet.

The Plant Installation

During the roasting and post-blending process, the SCADA system collects approximately 5,000 data points (quality, batches, weight, etc.). The plants are organized into Screening, where the mixture is prepared for roasting; Roasting, which is carried out on a machine that is monitored by a dedicated system and integrated within the plant via a set of digital interfaces; and Unloading and

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Storage, where the finished product is taken from the plant to the distribution silos. The post-blending plants are similar to Roasting, except that the coffee mixtures are already roasted.

Lavazza's Distributed process collects approx. 5,000 points. The systems handle the distribution of the product on the plant floor. Two systems operate in parallel, one to distribute the raw material and the other to distribute partly processed materials.

The Packing process collects 1,000 points from field sources (for device states and commands) and for management data (product codes, quality, routing etc.). These plants deal with the packaging of the product. They manage the data integrity and processing of the packing sequence all along the line. That includes the systems for stamping the items, for storage units and for tracing of the product from packet filling to palletizing for distribution. These systems interface with others so as to manage the label formats, to check the weights of manufactured product and to acquire production data for sending to the corporate file servers for verification. The production orders and the feedback streams on production progress are forwarded through PcVue. Starting from basic supervision, PcVue has thus become a vital link in the control chain of production processes.

Results

Via basic supervision controls, PcVue SCADA has become a vital link in the chain of control for the production processes. This new control system has provided Lavazza with standardization at the top most plant level. As well as primary benefits for the operators' graphical user interface (GUI) and integration with the various information systems. The use of multiple windows also provides much greater detail than the previous supervisory systems did.

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